



[7590-01-P]

NUCLEAR REGULATORY COMMISSION

10 CFR Parts 50 and 52

[PRM-50-104; NRC-2012-0046]

Emergency Planning Zone

AGENCY: Nuclear Regulatory Commission.

ACTION: Petition for rulemaking; notice of receipt and request for comment.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC or the Commission) is publishing for public comment a notice of receipt for a petition for rulemaking (PRM), dated February 15, 2012, which was filed with the NRC by Mr. Michael Mariotte on behalf of the Nuclear Information and Resource Service (NIRS or the petitioner) and 37 co-petitioners. The petition was docketed by the NRC on February 17, 2012, and assigned Docket No. PRM-50-104. The petitioner requests that the NRC amend its regulations to expand the Emergency Planning Zones (EPZs) for nuclear power plants.

DATES: Submit comments by **[INSERT DATE THAT IS 75 DAYS AFTER PUBLICATION IN THE *FEDERAL REGISTER*]**. Comments received after this date will be considered if it is practical to do so, but the NRC is able to assure consideration only for comments received on or before this date.

ADDRESSES: You may access information and comment submissions related to this petition for rulemaking, which the NRC possesses and is publicly available, by searching on <http://www.regulations.gov> under Docket ID NRC-2012-0046. You may submit comments by the following methods:

- **Federal rulemaking Web site:** Go to <http://www.regulations.gov> and search for Docket ID NRC-2012-0046. Address questions about NRC dockets to Carol Gallagher; telephone: 301-492-3668; e-mail: Carol.Gallagher@nrc.gov.
- **E-mail comments to:** Rulemaking.Comments@nrc.gov. If you do not receive an automatic e-mail reply confirming receipt, then contact us at 301-415-1677.
- **Fax comments to:** Secretary, U.S. Nuclear Regulatory Commission at 301-415-1101.
- **Mail comments to:** Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, ATTN: Rulemakings and Adjudications Staff.
- **Hand deliver comments to:** 11555 Rockville Pike, Rockville, Maryland 20852, between 7:30 a.m. and 4:15 p.m. (Eastern Time) Federal workdays; telephone: 301-415-1677.

For additional direction on accessing information and submitting comments, see “Accessing Information and Submitting Comments” in the **SUPPLEMENTARY INFORMATION** section of this document.

FOR FURTHER INFORMATION CONTACT: Cindy Bladey, Chief, Rules, Announcements, and Directives Branch, Division of Administrative Services, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone: 301-492-3667, e-mail: Cindy.Bladey@nrc.gov.

SUPPLEMENTARY INFORMATION:

I. Accessing Information and Submitting Comments

A. Accessing Information

Please refer to Docket ID NRC-2012-0046 when contacting the NRC about the availability of information for this petition for rulemaking. You may access information related to this petition for rulemaking, which the NRC possesses and is publicly available, by the following methods:

- **Federal Rulemaking Web Site:** Go to <http://www.regulations.gov> and search for Docket ID NRC-2012-0046.

- **NRC's Agencywide Documents Access and Management System (ADAMS):**

You may access publicly available documents online in the NRC Library at <http://www.nrc.gov/reading-rm/adams.html>. To begin the search, select "[ADAMS Public Documents](#)" and then select "[Begin Web-based ADAMS Search](#)." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to pdr.resource@nrc.gov. The PRM is available in ADAMS under Accession No. ML12048B004.

- **NRC's PDR:** You may examine and purchase copies of public documents at the NRC's PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

B. Submitting Comments

Please include Docket ID NRC-2012-0046 in the subject line of your comment submission, in order to ensure that the NRC is able to make your comment submission available to the public in this docket.

The NRC cautions you not to include identifying or contact information in comment submissions that you do not want to be publicly disclosed. The NRC posts all comment submissions at <http://www.regulations.gov> as well as entering the comment submissions into ADAMS, and the NRC does not edit comment submissions to remove identifying or contact information.

If you are requesting or aggregating comments from other persons for submission to the NRC, then you should inform those persons not to include identifying or contact information in their comment submissions that they do not want to be publicly disclosed. Your request should state that the NRC will not edit comment submissions to remove such information before making the comment submissions available to the public or entering the comment submissions into ADAMS.

II. The Petitioner and the 37 Co-petitioners

The PRM describes the petitioner and the 37 co-petitioners as “environmental and civic organizations with members who live within 100 miles of U.S. nuclear power plants and who are concerned that current NRC emergency planning requirements are not adequate to protect their health and safety in the event of an accident at the plant.”

The NIRS is a non-profit organization founded in 1978, which serves as a “national information and networking center for people concerned about nuclear power, radioactive waste, radiation and sustainable energy issues.” In addition, the NIRS is described as an organization that provides public education on issues such as deregulation of radioactive materials, new reactor licensing, transportation of radioactive waste, and nuclear reactor safety.

III. The Petition

The petitioner requests that the NRC amend Title 10 of the *Code of Federal Regulations* (10 CFR) 50.47, “Emergency Plans,” and Appendix E to 10 CFR Part 50, “Emergency Planning and Preparedness for Production and Utilization Facilities,” and include the modifications in 10 CFR Part 52, “Licenses, Certifications, and Approvals for Nuclear Power Plants.” Specifically, the petitioner requests that 1) the Plume Exposure Pathway EPZ radius be expanded from a 10-mile radius to a 25-mile radius, 2) a new 50-mile radius Emergency Response Zone, with more limited requirements than the Plume Exposure Pathway EPZ, be established, 3) the Ingestion Pathway EPZ radius be expanded from a 50-mile radius to a 100-mile radius, and 4) the “emergency plans are tested to encompass initiating and/or concurrent natural disasters that may affect both accident progression and evacuation conduct.” The petitioner asserts that “the requested amendments are essential for the protection of public health and safety in light of the real-world experience of the Chernobyl and Fukushima disasters, which were more severe and affected a much larger geographical area than provided for in NRC regulations.”

The petitioner states that “[t]he NRC should amend 10 CFR 50.47(c)(2) to create a three-tiered emergency planning zone....” The petitioner’s three-tiered EPZ includes a 25 mile Plume Exposure Pathway EPZ, 50 mile Emergency Response Zone, and 100 mile Ingestion Exposure Pathway Zone. The following paragraphs provide a summary of the petitioner’s proposed revisions to 10 CFR 50.47(c)(2).

25 Mile Plume Exposure Pathway EPZ

The petitioner proposes the following revision to 10 CFR 50.47(c)(2) with regards to the plume exposure pathway EPZ:

A Plume Exposure Pathway zone shall consist of an area about 25 miles (40 km) in radius. Within this zone, detailed plans must be developed to provide

prompt and effective evacuation and other appropriate protective measures, including conducting of biannual full-scale emergency evacuation drills. Sirens will be installed within this zone to alert the population of the need for evacuation. Transportation for elderly, prison and school populations shall be provided within this zone. Emergency shelters shall be located outside of the 25-mile zone.

The petitioner asserts that the expansion of the plume exposure pathway EPZ from a 10 mile radius to a 25 mile radius “would provide no new requirements other than expansion of the EPZ.”

50 Mile Emergency Response Zone

The petitioner proposes the following revision to 10 CFR 50.47(c)(2) with regards to an Emergency Response Zone:

The [emergency response zone] shall be about 50 miles in radius. Within this 50 mile zone, the licensee must identify evacuation routes for all residents within this zone and annually provide information to all residents within this zone about these routes and which they are supposed to take in the event of an emergency. The licensee must make basic pre-arrangements for potential transport of disabled/hospital/prison populations. Emergency centers for the public currently located less than 25 miles out shall be relocated to 25 miles or further out. Information shall be made available to the public within this zone through television, internet and radio alerts, text message notices, and other appropriate means of public communication.

The petitioner notes that this revision “would require measures be carried out between the new 25 mile Plume Exposure Pathway EPZ and a new Emergency Response Zone of about a 50 mile radius.” The petitioner states that the Plume Exposure Pathway EPZ emergency evacuation requirements and biannual exercises are not required in the Emergency Response Zone. The petitioner further states “this new zone would provide a modest level of pre-planning that would enable rapid expansion of the 25 mile zone when necessary. Information regarding evacuation such as identification of evacuation routes and locations of emergency shelters in

the event of a large scale disaster would be identified and would be provided to members of the public annually, and a limited number of other pre-arrangements would be made.”

100 Mile Ingestion Exposure Pathway Zone

The petitioner proposes the following revision to 10 CFR 50.47(c)(2) with regards to the ingestion pathway EPZ:

The ingestion pathway EPZ shall be about 100 miles in radius. In the event of a radioactive release, the deposition of radionuclides on crops, other vegetation, bodies of surface water and ground surfaces can occur. Measures will be implemented to protect the public from eating and drinking food and water that may be contaminated. Information shall be made available to the public within this zone through television and radio alerts, text message notices, and other appropriate means of public communication.

The petitioner states that “[t]he current Ingestion Exposure Pathway Zone exists to protect food, water and anything intended for human consumption within 50 miles of a nuclear power plant.” The petitioner further states “[g]iven that radiation can, and does, have far-reaching effects on food on a large radius, the Ingestion Pathway EPZ should be expanded.”

Drills and Exercises

The petitioner proposes amending 10 CFR 50.47(b)(14) with regards to drills and exercises by adding:

Within the emergency evacuation zone full scale drills and exercises will be conducted on a biannual basis. Every other exercise and drill shall include a scenario involving an initiating or concurrent regionally-appropriate natural disaster.

IV. The Petitioner's Bases

The petitioner states, “[w]ith the exception of a 2011 rule requiring licensees to use current U.S. census data to prepare evacuation time estimates (ETEs) and update them every 10 years, the NRC has made few significant improvements to its offsite emergency response regulations since they were promulgated in 1980.” The petitioner notes that “the NRC denied a set of petitions [submitted by the Citizens Task Force of Chapel Hill, et al.] to increase the size of the plume exposure pathway EPZ and the ingestion pathway EPZ” in 1990. The petitioner asserts that “[t]he Commission declined to revisit the assumptions about severe reactor accident risks that underlie its emergency planning regulations, concluding that the existing size of the EPZs was adequate to achieve ‘reasonable and feasible dose reduction’ under the circumstances of each individual reactor site.” The petitioner’s bases for the petition are further presented in the following paragraphs.

Chernobyl, September 11, and Fukushima Experiences

The petitioner cites reports and findings regarding the Chernobyl and Fukushima Dai-ichi accidents, and the September 11, 2001, terrorist attacks to support the petition. The petitioner asserts that “[t]he accident at Fukushima, added to the experience of the Chernobyl disaster, demonstrates that the 10 mile plume exposure pathway EPZ and the 50 mile ingestion pathway EPZ are inadequate to protect the public health and safety, both because severe accidents are clearly more likely than any government previously has estimated and because their effects are far more widespread.” The petitioner specifically cites the “Recommendations for Enhancing Reactor Safety in the 21st Century: The Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident” (Fukushima Task Force Report, ADAMS Accession No. ML111861807), dated July 12, 2011. The petitioner notes that the Task Force

formed to examine the Fukushima disaster “addressed the issues of protecting against accidents resulting from natural phenomena, mitigating the consequences of such accidents, and ensuring emergency preparedness” in the Fukushima Task Force Report. The petitioner also notes that the Task Force “made several recommendations, including strengthening and integrating onsite emergency response capabilities such as emergency operating procedures, severe accident management guidelines, and extensive damage mitigation guidelines.” The petitioner asserts that “the task force failed to make any recommendations on improving emergency response capabilities or expanding EPZ size, despite the Task Force’s acknowledgement that it was necessary to evacuate Japanese residents up to and beyond a 20-kilometer (12-mile) area around Fukushima.” As the petitioner notes, the NRC is evaluating several Task Force recommendations related to emergency preparedness. More information about these activities is available through the NRC’s public Web site at <http://www.nrc.gov/japan/japan-info.html>.

Real-World Experience and Improved Understanding of Severe Accident Risks at Nuclear Reactors

The petitioner states that “[t]he NRC’s existing emergency planning regulations (and the NRC’s decision in *Citizens Task Force of Chapel Hill*) are based primarily on experience gained by the Three Mile Island accident and on NRC reactor safety studies conducted from the 1950s through the 1970s (for example, WASH-1400 and NUREG-1150) and are encapsulated in NUREG-0396.” The petitioner notes that in 2006, “the NRC began the State-of-the-Art Reactor Consequence Analyses (SOARCA) project to re-evaluate the ‘realistic consequences of a severe reactor accident.’” The petitioner cites an October 2010 draft of the SOARCA report to support the petition. The petitioner asserts that “real-world experience at Fukushima trumps the

computer modeling of SOARCA in any case and has presented the world – and the NRC – with an actual accident that exceeds postulated scenarios.” The petitioner continues by stating “[c]omputer models, simulations, evaluations of projected scenarios – all can be useful tools in evaluating the relative risks of complex systems like nuclear reactors. They can even be useful – in the absence of real-world information – in establishing regulations. But they exist primarily to generate postulated data in the absence of actual data – they are not a substitute for actual, real-world experience.”

Real-World Experience and Improved Understanding of Severe Accident Risks at [Spent] Fuel Pools

The petitioner states that “[s]pent fuel pools pose a serious and dangerous threat to the populations surrounding nuclear plants. Accidents could cause widespread contamination of highly radioactive materials.” The petitioner asserts that “[r]adiation exposure would be significantly worse if there were to be [a spent] fuel pool accident in addition to a reactor accident.” The petitioner makes the following statement regarding spent fuel pools: “In theory, this form of storage is meant to be temporary. But, because offsite storage of irradiated fuel is currently unavailable, high density storage of this material has been permitted to occur.” The petitioner also states, “Aside from concerns associated with the dense packing of a pool, the pools themselves are located outside of the primary containment which is designed to keep radiation which is released during an emergency event from escaping in to the environment.¹ Because they are outside of the primary containment structure, they are more vulnerable than the core to natural disasters and terrorist attacks.”

Improved Understanding of Health Effects of Radiation

The petitioner states “[t]here is no ‘safe’ dose of radiation, and as such the consideration of the effects of release of radiation should be given greater consideration.” The petitioner cites the 2006 National Research Council of the National Academy of Sciences Biological Effects of Ionizing Radiation (BEIR) VII Report and asserts the report confirms that “any exposure to radiation – including background radiation – increases a person’s risk of developing cancer.” The petitioner states that “the NRC and licensees must recognize that their emergency response programs must be designed to protect not only against radiation levels that would cause acute effects, but also radiation levels that would exceed annual exposure limits....” The petitioner asserts that “a government policy that implicitly states, as do NRC’s existing emergency planning regulations, that radiation exposure levels higher than normally allowable – by orders of magnitude – are acceptable under emergency conditions, is a government policy that is unsupportable and without basis in reality.”

Particular Problems Associated with Pressure Suppression Containments

The petitioner asserts that “[t]he failure of a pressure suppression containment can result in widespread radioactive contamination of areas surrounding nuclear plants.” The petitioner states, “In Japan, hydrogen explosions occurred at (at least) three GE Mark I reactors using a pressure suppression system.” The petitioner also states, “There are 23 GE Mark I nuclear reactors – about one-quarter of the nation’s reactors – essentially identical to the reactors that were destroyed at Fukushima, that are operational in the United States.” The petitioner makes the following statement: “Not only can the NRC no longer dismiss such accidents in the U.S., the NRC must instead assume that such accidents can occur in the U.S. and even, given the history of the nuclear age that large nuclear accidents are occurring at a much greater

frequency than previously postulated, the NRC – at least for emergency planning purposes if nothing else – must assume that such accidents *will* occur in the U.S.”

Natural Disasters and Emergency Response Planning

The petitioner states that “[n]atural disasters have become increasingly prevalent in recent years causing concerns for nuclear reactors that are susceptible to various weather phenomena and disasters.” The petitioner asserts that “[c]urrent NRC emergency planning regulations do not reflect that natural disasters can both cause nuclear accidents and/or may occur concurrently with nuclear accidents.” The petitioner requests the following:

Emergency response planning for nuclear facilities must incorporate regionally-relevant initiating and concurrent natural disasters as a regular part of emergency exercises, to assure the most effective possible emergency response in the event of a nuclear accident triggered by or complicated by a natural disaster. For this reason, we propose that every other emergency exercise include a scenario that includes a regionally-relevant initiating and concurrent natural disaster. By “regionally relevant” we mean that plans should be made and exercises undertaken for the type of natural disaster most likely to affect a given licensee site.... However, for areas that may be affected by more than one type of natural disaster...each exercise should include a different regionally relevant scenario.

Dated at Rockville, Maryland, this 24th day of April 2012.

For the Nuclear Regulatory Commission.

/RA/

Annette L. Vietti-Cook,
Secretary of the Commission.

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